

REMARKS

Status of the Claims

Claims 1-36 are pending. Claims 33-36 have been withdrawn from consideration.

Claims 1-6, 8-21, 23-32 have been rejected.

By this response, please **amend** claims 1, 3, 4, 6, 9, 10, 19, 24, 25, and **add** new claims 36-47. Claims 1-32, 36-47 are now pending.

Claim Rejections

35USC112, second paragraph

The Examiner rejected claims 9-10, 24-25 under 35USC112, second paragraph. The Examiner requests whether applicants mean to say “on the substrate”—instead of “in the substrate.”

Claims 9, 10, 24, 25 have been amended to say “on the substrate”.

35USC102(e)

The Examiner rejected claims 1, 5, 17 under 35USC102(e) as being anticipated by Seyyedy et al. (U.S. Patent 6,754,124) or Freitag et al. (U.S. Patent No. 6,577,527).

Regarding Seyyedy et al., the Examiner stated:

“Fig.1 of Seyyedy disclose a magnetic memory structure comprising

a first group of magnetic tunnel junctions (group of MTJ on the left), the first group comprising a first group layer (bottom layer on the left), the first layer comprising a first plurality of magnetic tunnel junctions;

a first group second layer (next layer above bottom layer on the left) formed adjacent to the first layer, the second layer comprising a second plurality of magnetic tunnel junctions; and

a common first group conductor (34s and 32 on the left) connected to each of the first plurality of magnetic tunnel junctions and the second plurality of magnetic tunnel junctions.”

Regarding claim 5, the Examiner further stated:

“Seyyedy et al. further disclose, in FIG. 1, a second group of magnetic tunnel junctions, the second group comprising:

a second group first layer (bottom layer on the right), the second group first layer comprising a third plurality of magnetic tunnel junctions;

a second group second layer (next layer above the bottom layer on the right) formed adjacent to the second group first layer, the second group second layer comprising a fourth plurality of magnetic tunnel junctions;

a common second group conductor (34s and 32 on the right) connected to each of the third plurality of magnetic tunnel junctions and the fourth plurality of magnetic tunnel junctions.

Amended claim 1 includes the following features:

a first group first layer, the first layer comprising a first plurality of magnetic tunnel junctions;

a first group second layer formed adjacent to the first layer, the second layer comprising a second plurality of magnetic tunnel junctions; and

a common first group conductor connected to each of the first plurality of magnetic tunnel junctions and the second plurality of magnetic tunnel junctions; the common first group conductor comprising first heater regions proximate to the first plurality of magnetic tunnel junctions and the second plurality of magnetic tunnel junctions; wherein

current conducted through the common first group conductor can be used to aid in both writing and heating of more than one of the first magnetic tunnel junctions.

(Emphasis added)

Claim Rejections – 35 U.S.C. § 102(e)

Respectfully, Applicant disagrees and traverses the rejection.

To anticipate a Claim, Seyyedy must teach every element of the Claim and “the identical invention must be shown in as complete detail as contained in the ... Claim.” MPEP 2131 citing *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987) and *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989). Applicant respectfully submits that many differences exist in the Claimed elements between Seyyedy and Applicant's Claimed invention such that Seyyedy cannot be said to anticipate Applicant's invention. More specifically, Seyyedy does not teach every element of Applicant's Claims 1, 19, and 21, as demonstrated herein below.

Seyyedy does not teach or describe “a common first group conductor connected to each of the first plurality of magnetic tunnel junctions and the second plurality of magnetic tunnel junctions; the common first group conductor comprising first heater regions proximate to the first plurality of magnetic tunnel junctions and the second plurality of magnetic tunnel junctions; wherein current conducted through the common first group conductor can be used to aid in both writing and heating of more than one of the first magnetic tunnel junctions.”

Claim Rejections – 35 U.S.C. § 103(a)

For the purpose of the following discussion, the Examiner is respectfully reminded of the basic considerations which apply to obviousness rejections.

When applying 35 U.S.C. §103, the following tenets of patent law must be adhered to:

(A) The Claimed invention must be considered as a whole;

(B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the Claimed invention; and

(D) Reasonable expectation of success is the standard with which obviousness is determined. MPEP §2141.01, *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1134 n.5, 229 U.S.P.Q. 182, 187 n.5 (Fed. Cir. 1986).

In addition, it is respectfully noted that to substantiate a *prima facie* case of obviousness the initial burden rests with the Examiner who must fulfill three requirements. More specifically:

To establish a *prima facie* case of obviousness, three basic criteria must be met.

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings.

Second, there must be a reasonable expectation of success.

Finally, the prior art reference (or references when combined) must teach or suggest all the Claim limitations. The *teaching or suggestion* to make the Claimed combination **and** the *reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure*. (emphasis and formatting added) MPEP § 2143, *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)

The Examiner has rejected Claims 2-4, 6, 8-16, 18-2, 23-32 as being allegedly unpatentable over Seyyedy in view of Nickel (US Patent No. 6,603,678) or Abraham et al (US Patent No. 6,724,674). Applicant respectfully disagrees and traverses the rejection. Applicant includes herein by reference each and every statement made above, in addition these Claims are also patentable for the following additional reasons.

Paralleling the MPEP references cited above, the Federal Circuit has enunciated several guidelines in making a §103 obviousness determination. A *prima facie* case of obviousness is established when and only *when the teachings from the prior art itself* would appear to have *suggested* the Claimed subject matter to a person of ordinary skill in the art. *In re Bell*, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051 (C.C.P.A. 1976)). (Emphasis added). “The mere fact that the prior art *may* be modified in the manner suggested by the Examiner does *not* make the modification obvious unless the prior art suggested the desirability of the modification.” (emphasis added) *In re Fritch*, 23 U.S.P.Q.2d 1780, 1783-84 (Fed. Cir. 1992).

As described, Seyyedey does not teach or describe “a common first group conductor connected to each of the first plurality of magnetic tunnel junctions and the second plurality of magnetic tunnel junctions; the common first group conductor comprising first heater regions proximate to the first plurality of magnetic tunnel junctions and the second plurality of magnetic tunnel junctions; wherein current conducted through the common first group conductor can be used to aid in both writing and heating of more than one of the first magnetic tunnel junctions.”

Nickel et al.

Nickels (column 4, lines 8-65) teaches a system and method of thermal-assisted switching of magnetic memory elements that includes a word line 116, and bit line 118 and a heating line 120. A selected memory element 114 includes a selection of a corresponding word line 116, bit line 118 and heating line 120. Figure 3 shows a single current source 122 for the word lines 116, a single current source 126 for the bit lines 118, and a single current source 130 for the heating lines 120. Figures 5a, 5b, 5c and 5d show different patterns for the heating lines 120. In these patterns the heating lines 120 extend diagonally across the array 112, as opposed to vertically and horizontally like the word lines and bit lines. The embodiments of Nickel include the following set of conditions:

1. Separate conductive lines are provided for writing (bit lines and word lines) and for heating (heating line) of the magnetic memory cells.
2. No single conductive line of Nickels provides aiding of writing and heating of a plurality of magnetic memory cells.

Abraham et al.

Abraham teaches a memory storage device that includes a memory cell and a heating element proximate to the memory cell. The memory storage device includes a word line 2, a bit line 5, a heating element 56 and a conductive terminal 54. See column 6, lines 20-27—The heating element 56 is heated by an external energy source. Abraham teaches away from a conductive line that aids in both heating and writing to a plurality of magnetic memory cells—Abraham requires at least two separate conductive lines. Similar to Nickels, Abraham includes:

1. Separate conductive lines are provided for writing (bit lines and word lines) and for heating (conductive terminal) of the magnetic memory cells.
2. No single conductive line of Abraham provides aiding of writing and heating of a plurality of magnetic memory cells.

The *the teachings from the cited prior art itself* does not *suggest* the claimed inventions. That is, Seyyedy in view of Nickel (US Patent No. 6,603,678) or Abraham does not teach the claimed invention.

For the described reasons, claims 1 and 19 are patentable over the cited prior art. Claims 2-18, 20-32 are directly or indirectly dependent upon claims 1 and 19. Therefore, claims 1-32 are patentable over the cited prior art.

New claim 37 includes features that the Examiner has indicated are allowable. Claims 38-48 are dependent upon claim 36. Therefore, claims 36-47 are allowable.

No new matter has been added by these amendments.

The applicants respectfully request reconsideration of the claims in view of the amendments and remarks made herein. A notice of allowance is earnestly solicited.

Respectfully submitted,
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